

SEQUENCE LISTING

<110> Thomas Buehler, Reto Andreas Gradient, Reinhard Korn, Rao Movva
<120> pCAR and its uses

<130> 4-31499A

<160> 4

<170> PatentIn version 3.0

<210> 1

<211> 4286

<212> DNA

<213> Artificial/Unknown

<220>

<221> CDS

<222> (3229)..(4014)

<223> delta pCAR gene

<400> 1

| | | | | | | |
|-------------|------------|-------------|-------------|-------------|------------|------|
| cggtgcgggc | ctcttcgcta | ttacgccagc | tggcgaaagg | gggatgtgct | gcaaggcgat | 60 |
| taagttgggt | aacgccaggg | ttttcccagt | cacgacgttg | taaaacgacg | gccagtgc当地 | 120 |
| agttggatc | tttgcattgg | cccacggctc | tcaggatggg | gatgctcccc | ttcagcaccc | 180 |
| ggttccctt | ggaaactgat | ggtcctggct | ctgtggcatg | gcagtggcac | tgtgaggagc | 240 |
| ccctaccagc | agcacacagt | gggtttggca | ctgccacgct | ccggatgccg | cgctctgatc | 300 |
| caacccata | atcaaggaa | cccgaaattgc | cccatcattg | cccccaccac | ccccatcctg | 360 |
| ccggggccctc | acacccacg | ctgccttgtg | gtgacattcc | ccagccaaa | cccacggctt | 420 |
| catggctacc | gcggggcatt | tcccattgcc | gccccattat | cagctctgca | cacccc当地 | 480 |
| tgtacccatg | cctcgtggct | gcccttcttt | gacgtataat | cttctaatta | atacccggcc | 540 |
| ttgtcaaaat | ggagcacaaa | cgttaattaa | ttccccagca | ggcaggtaat | taacagtgtg | 600 |
| actccctttt | tgctgcgagt | ggggctgata | cagagagatg | tggcactatg | gagccc当地 | 660 |
| ggtcctggca | ctgggtgccc | acggaggtcc | ccatgtgctg | cagtgtcacc | gcctccgagg | 720 |
| tgacagtatt | gtccctgcgg | tgtccctgca | gctcagctct | gtccacaggg | ccacctccag | 780 |
| tttggagggg | acacaatgca | gccccgatgc | aacccatcct | cgcagcatcc | cagggacaaa | 840 |
| gaccccactg | caagaccgca | cacagggctg | ggtcccgctc | ccctaataatc | tacagtgttt | 900 |
| ttgcatggcc | ccttaatcaa | tgcagttat | cagcatgcgc | tcatgcaccg | ctctggagct | 960 |
| gcaaagcccc | tgcgagcgct | gctcaccaac | accgcgcacc | gccccggccc | agcctgcagc | 1020 |
| acgcgctgca | aacaggaaag | aaacaaaata | ttgccccaaat | gtaggcaaag | gcattcggct | 1080 |
| gccttgacct | ccgcccggcc | gggcctgcc | tgactcagct | ccttactcag | cgctcgcttc | 1140 |

| | | | | | | |
|-------------|-------------|-------------|--------------|-------------|--------------|------|
| ctccctccgg | ctgccaccgc | cgcagcgcac | accctgacaa | agagtggccc | ttaacgggct | 1200 |
| ctgaggtgca | cccagcagtg | caactcagcag | tccaaaggcc | ggcctggagg | tttgcaccgc | 1260 |
| tacgtgctga | cattagcatt | gaacttggcc | ctgggttagtg | ctgcaggccg | ggcgaaaaatgg | 1320 |
| gtgttagagag | tgcagcgcgc | gttgcacccg | gtgccccttc | ccctcccttg | catcccagca | 1380 |
| ggctgcaccc | cagcaccagg | cccgtgcattg | catgctcctg | gtgttattgc | agcctggtgc | 1440 |
| atgcatgcgt | cttagtggtg | cagcgtgtg | catgcattct | ccttggtgtg | tagcagctt | 1500 |
| gtgcattgt | accctcggt | gttattgctg | ctctgtgcac | gcacgctcat | tgtatcactt | 1560 |
| catcccagtg | catgcactca | cactggagcg | attgctgctc | ggtgcacgca | cactcattgt | 1620 |
| atcacgtcag | ctcagtggt | gcacgcacac | cggtgttatt | gctgctcggt | gcgtgcattgc | 1680 |
| acatcagtgt | cgtgcagct | cagtgcattgc | acgctcatttgc | cccatcgcta | tccctgcctc | 1740 |
| tcctgctggc | gctccccggg | aggtgacttc | aaggggaccg | caggaccacc | tcgggggtgg | 1800 |
| ggggaggggct | gcacacgcgg | accccgctcc | ccctcccaa | caaagcactg | tggaatcaaa | 1860 |
| aaggggggag | gggggatgga | ggggcgcgtc | acaccccccgc | cccacaccct | cacctcgagg | 1920 |
| tgagccccac | gttctgcttc | actctccccca | tctccccccc | ctccccaccc | ccaattttgt | 1980 |
| atttatttat | tttttaattt | ttttgtgcag | cgtgggggc | gggggggggg | ggggcgcgcg | 2040 |
| ccagggcggg | cggggcggg | cgaggggcgg | ggcggggcga | ggcggagagg | tgcggcgca | 2100 |
| gccaatcaga | gcggcgcgc | ccgaaagttt | ccttttatgg | cgaggcggcg | gcggcggcg | 2160 |
| ccctataaaa | agcgaagcgc | gcggcggcg | ggagtcgtcg | cggtgccttc | gccccgtgcc | 2220 |
| ccgctccgcg | ccgcctcgcg | ccgccccccc | cggctctgac | tgaccgcgtt | actcccacag | 2280 |
| gtgagcgggc | gggacggccc | ttctccctcg | ggctgttaatt | agcgcttgg | ttaatgacgg | 2340 |
| ctcgtttctt | ttctgtggct | gcgtgaaagc | cttaaaggc | tccgggaggg | ccctttgtgc | 2400 |
| ggggggggagc | ggctcgaaaa | gtgcgtgcgt | gtgtgtgtgc | gtggggagcg | ccgcgtgcgg | 2460 |
| cccgcgctgc | ccggcggtcg | tgagcgctgc | gggcgcggcg | cggggcttgc | tgcgctccgc | 2520 |
| gtgtgcgcga | ggggagcgcgc | gccggggcg | gtgcccccg | gtgcgggggg | gctgcgaggg | 2580 |
| gaacaaaggc | tgcgtgcgg | gtgtgtgcgt | gggggggtga | gcaggggggtg | tgggcgcggc | 2640 |
| ggtcgggctg | taacccccc | ctgcacccccc | ctcccccagtg | tgctgagcac | ggcccggttt | 2700 |
| cgggtgcggg | gctccgtgcg | gggcgtggcg | cggggctcgc | cgtgccgggc | gggggggtggc | 2760 |
| ggcaggtgg | ggtgcgggc | ggggcggggc | cgcctcgggc | cggggagggc | tcgggggagg | 2820 |
| ggcgcggcg | ccccggagcg | ccggcggtcg | tcgaggcgcgc | gcgagccgc | gccattgcct | 2880 |
| tttatggtaa | tgcgtgcgaga | gggcgcaggg | acttcctttg | tcccaaattct | ggcggagccg | 2940 |
| aaatctggaa | ggcgccgcgc | cacccctct | agcgggcgcgc | ggcgaagcgg | tgcggcgccg | 3000 |

| | |
|---|------|
| gcaggaagga aatgggcggg gagggccttc gtgcgtcgcc gcccgcgt ccccttctcc | 3060 |
| atctccagcc tcggggctgc cgcaaaaaa cggctgcctt cgggggggac ggggcaggc | 3120 |
| ggggttcggc ttctggcgtg tgaccggcgg gtttatatac ttcccttctc tgttcctccg | 3180 |
| cagcccccaa gcttaaggta cacggccac gtggggacta gtgccacc atg gcg ctc | 3237 |
| Met Ala Leu | |
| 1 | |
| ctg ctg tgc ttc gtg ctc ctg tgc gga gtc gcg gat ctc acc aga agt | 3285 |
| Leu Leu Cys Phe Val Leu Leu Cys Gly Val Ala Asp Leu Thr Arg Ser | |
| 5 10 15 | |
| ttg agt atc act act cct gaa cag atg att gaa aag gcc aaa ggg gaa | 3333 |
| Leu Ser Ile Thr Thr Pro Glu Gln Met Ile Glu Lys Ala Lys Gly Glu | |
| 20 25 30 35 | |
| act gcc tat ttg cca tgc aga ttt acc ctg ggt cca gaa gac cag ggg | 3381 |
| Thr Ala Tyr Leu Pro Cys Arg Phe Thr Leu Gly Pro Glu Asp Gln Gly | |
| 40 45 50 | |
| ccg ctg gac atc gag tgg ctg ctg tca cca gct gat aat cag aag gtg | 3429 |
| Pro Leu Asp Ile Glu Trp Leu Leu Ser Pro Ala Asp Asn Gln Lys Val | |
| 55 60 65 | |
| gat caa gtg att att tta tat tct gga gac aaa att tat gac gac tac | 3477 |
| Asp Gln Val Ile Ile Leu Tyr Ser Gly Asp Lys Ile Tyr Asp Asp Tyr | |
| 70 75 80 | |
| tac caa gat ctg aaa gga cga gta cat ttt aca agt aat gat ctc aaa | 3525 |
| Tyr Gln Asp Leu Lys Gly Arg Val His Phe Thr Ser Asn Asp Leu Lys | |
| 85 90 95 | |
| tca ggt gat gca tca ata aat gta aca aat cta cag ttg tca gat att | 3573 |
| Ser Gly Asp Ala Ser Ile Asn Val Thr Asn Leu Gln Leu Ser Asp Ile | |
| 100 105 110 115 | |
| ggc aca tat cag tgc aaa gtg aaa aag gct cct ggt gtt gga aat aag | 3621 |
| Gly Thr Tyr Gln Cys Lys Val Lys Lys Ala Pro Gly Val Gly Asn Lys | |
| 120 125 130 | |
| aag att cag ctg aca gtt ctt ctt aag cct tca ggt aca aga tgt tat | 3669 |
| Lys Ile Gln Leu Thr Val Leu Leu Lys Pro Ser Gly Thr Arg Cys Tyr | |
| 135 140 145 | |
| gtt gat gga tca gaa gaa att gga aat gac ttt aaa cta aaa tgt gaa | 3717 |
| Val Asp Gly Ser Glu Glu Ile Gly Asn Asp Phe Lys Leu Lys Cys Glu | |
| 150 155 160 | |
| cca aaa gaa ggt tca ctc cca tta cta tat gaa tgg cag aaa ttg tcc | 3765 |
| Pro Lys Glu Gly Ser Leu Pro Leu Leu Tyr Glu Trp Gln Lys Leu Ser | |
| 165 170 175 | |
| aat tca cag aag ctg ccc acc ttg tgg tta gca gaa atg act tca cct | 3813 |
| Asn Ser Gln Lys Leu Pro Thr Leu Trp Leu Ala Glu Met Thr Ser Pro | |
| 180 185 190 195 | |
| gtt ata tct gta aaa aat gcc tct act gaa tac tct ggg aca tac agc | 3861 |
| Val Ile Ser Val Lys Asn Ala Ser Thr Glu Tyr Ser Gly Thr Tyr Ser | |

| 200 | 205 | 210 | |
|---|-----|-----|------|
| tgt acc gtg aaa aac aga gtg ggc tct gat cag tgc ctg ctt cgc ctg Cys Thr Val Lys Asn Arg Val Gly Ser Asp Gln Cys Leu Leu Arg Leu 215 220 225 | | | 3909 |
| gat gtg gtt cct cct tca aat aga gct gga aca att gca gga gct gtt Asp Val Val Pro Pro Ser Asn Arg Ala Gly Thr Ile Ala Gly Ala Val 230 235 240 | | | 3957 |
| ata gga gtt ttg ctt gct cta gtg ctc att ggt ctt atc atc ttt tgc Ile Gly Val Leu Leu Ala Leu Val Leu Ile Gly Leu Ile Ile Phe Cys 245 250 255 | | | 4005 |
| tgt cgt taa tctagataag taatgatcat aatcagccat atcacatctg Cys Arg 260 | | | 4054 |
| tagaggtttt acttgcttta aaaaacctcc cacacctccc cctgaacctg aaacataaaa | | | 4114 |
| tgaatgcaat tgggttggtt aacttggttta ttgcagctta taatggttac aaataaagca | | | 4174 |
| atagcatcac aaatttcaca aataaagcat tttttcaact gcattctagt tgtggttgt | | | 4234 |
| ccaaactcat caatgtatct tatcatgtct ggatccccgg gtaccgagct cg | | | 4286 |
| <p><210> 2 <211> 261 <212> PRT <213> Artificial/Unknown</p> <p><400> 2</p> | | | |
| Met Ala Leu Leu Leu Cys Phe Val Leu Leu Cys Gly Val Ala Asp Leu 1 5 10 15 | | | |
| Thr Arg Ser Leu Ser Ile Thr Thr Pro Glu Gln Met Ile Glu Lys Ala 20 25 30 | | | |
| Lys Gly Glu Thr Ala Tyr Leu Pro Cys Arg Phe Thr Leu Gly Pro Glu 35 40 45 | | | |
| Asp Gln Gly Pro Leu Asp Ile Glu Trp Leu Leu Ser Pro Ala Asp Asn 50 55 60 | | | |
| Gln Lys Val Asp Gln Val Ile Ile Leu Tyr Ser Gly Asp Lys Ile Tyr 65 70 75 80 | | | |
| Asp Asp Tyr Tyr Gln Asp Leu Lys Gly Arg Val His Phe Thr Ser Asn 85 90 95 | | | |
| Asp Leu Lys Ser Gly Asp Ala Ser Ile Asn Val Thr Asn Leu Gln Leu 100 105 110 | | | |

Ser Asp Ile Gly Thr Tyr Gln Cys Lys Val Lys Lys Ala Pro Gly Val
115 120 125

Gly Asn Lys Lys Ile Gln Leu Thr Val Leu Leu Lys Pro Ser Gly Thr
130 135 140

Arg Cys Tyr Val Asp Gly Ser Glu Glu Ile Gly Asn Asp Phe Lys Leu
145 150 155 160

Lys Cys Glu Pro Lys Glu Gly Ser Leu Pro Leu Leu Tyr Glu Trp Gln
165 170 175

Lys Leu Ser Asn Ser Gln Lys Leu Pro Thr Leu Trp Leu Ala Glu Met
180 185 190

Thr Ser Pro Val Ile Ser Val Lys Asn Ala Ser Thr Glu Tyr Ser Gly
195 200 205

Thr Tyr Ser Cys Thr Val Lys Asn Arg Val Gly Ser Asp Gln Cys Leu
210 215 220

Leu Arg Leu Asp Val Val Pro Pro Ser Asn Arg Ala Gly Thr Ile Ala
225 230 235 240

Gly Ala Val Ile Gly Val Leu Leu Ala Leu Val Leu Ile Gly Leu Ile
245 250 255

Ile Phe Cys Cys Arg
260

<210> 3
<211> 1098
<212> DNA
<213> Artificial/Unknown

<220>
<221> CDS
<222> (1)..(1098)
<223> full length porcine CAR

<400> 3
atg gcg ctc ctg ctg tgc ttc gtg ctc ctg tgc gga gtc gcg gat ctc 48
Met Ala Leu Leu Leu Cys Phe Val Leu Leu Cys Gly Val Ala Asp Leu
1 5 10 15

acc aga agt ttg agt atc act act cct gaa cag atg att gaa aag gcc 96
Thr Arg Ser Leu Ser Ile Thr Thr Pro Glu Gln Met Ile Glu Lys Ala
20 25 30

| | |
|---|-----|
| aaa ggg gaa act gcc tat ttg cca tgc aga ttt acc ctg ggt cca gaa Lys Gly Glu Thr Ala Tyr Leu Pro Cys Arg Phe Thr Leu Gly Pro Glu 35 40 45 | 144 |
| gac cag ggg ccg ctg gac atc gag tgg ctg ctg tca cca gct gat aat Asp Gln Gly Pro Leu Asp Ile Glu Trp Leu Leu Ser Pro Ala Asp Asn 50 55 60 | 192 |
| cag aag gtg gat caa gtg att att tta tat tct gga gac aaa att tat Gln Lys Val Asp Gln Val Ile Ile Leu Tyr Ser Gly Asp Lys Ile Tyr 65 70 75 80 | 240 |
| gac gac tac tac caa gat ctg aaa gga cga gta cat ttt aca agt aat Asp Asp Tyr Tyr Gln Asp Leu Lys Gly Arg Val His Phe Thr Ser Asn 85 90 95 | 288 |
| gat ctc aaa tca ggt gat gca tca ata aat gta aca aat cta cag ttg Asp Leu Lys Ser Gly Asp Ala Ser Ile Asn Val Thr Asn Leu Gln Leu 100 105 110 | 336 |
| tca gat att ggc aca tat cag tgc aaa gtg aaa aag gct cct ggt gtt Ser Asp Ile Gly Thr Tyr Gln Cys Lys Val Lys Lys Ala Pro Gly Val 115 120 125 | 384 |
| gga aat aag aag att cag ctg aca gtt ctt ctt aag cct tca ggt aca Gly Asn Lys Lys Ile Gln Leu Thr Val Leu Leu Lys Pro Ser Gly Thr 130 135 140 | 432 |
| aga tgt tat gtt gat gga tca gaa gaa att gga aat gac ttt aaa cta Arg Cys Tyr Val Asp Gly Ser Glu Glu Ile Gly Asn Asp Phe Lys Leu 145 150 155 160 | 480 |
| aaa tgt gaa cca aaa gaa ggt tca ctc cca tta cta tat gaa tgg cag Lys Cys Glu Pro Lys Glu Gly Ser Leu Pro Leu Leu Tyr Glu Trp Gln 165 170 175 | 528 |
| aaa ttg tcc aat tca cag aag ctg ccc acc ttg tgg tta gca gaa atg Lys Leu Ser Asn Ser Gln Lys Leu Pro Thr Leu Trp Leu Ala Glu Met 180 185 190 | 576 |
| act tca cct gtt ata tct gta aaa aat gcc tct act gaa tac tct ggg Thr Ser Pro Val Ile Ser Val Lys Asn Ala Ser Thr Glu Tyr Ser Gly 195 200 205 | 624 |
| aca tac agc tgt acc gtg aaa aac aga gtg ggc tct gat cag tgc ctg Thr Tyr Ser Cys Thr Val Lys Asn Arg Val Gly Ser Asp Gln Cys Leu 210 215 220 | 672 |
| ctt cgc ctg gat gtg gtt cct cct tca aat aga gct gga aca att gca Leu Arg Leu Asp Val Val Pro Pro Ser Asn Arg Ala Gly Thr Ile Ala 225 230 235 240 | 720 |
| gga gct gtt ata gga gtt ttg ctt gct cta gtg ctc att ggt ctt att Gly Ala Val Ile Gly Val Leu Leu Ala Leu Val Leu Ile Gly Leu Ile 245 250 255 | 768 |
| gtg ttt tgc tgt cat aaa aag cgc aga gaa gaa aaa tac gaa aaa gaa Val Phe Cys Cys His Lys Lys Arg Arg Glu Glu Lys Tyr Glu Lys Glu 260 265 270 | 816 |
| gtg cat cat gat atc agg gaa gac gtg cct cct ccg aag agc aga acg | 864 |

| | | | |
|---|-----|-----|------|
| Val His His Asp Ile Arg Glu Asp Val Pro Pro Pro Lys Ser Arg Thr | | | |
| 275 | 280 | 285 | |
| tcc act gcc aga agc tac ctc ggc agc aac cac tcg tcc ctg gga tcc | | | 912 |
| Ser Thr Ala Arg Ser Tyr Leu Gly Ser Asn His Ser Ser Leu Gly Ser | | | |
| 290 | 295 | 300 | |
| atg tct cct tcc aac atg gaa ggc tat tcc aag act cag tat aac cag | | | 960 |
| Met Ser Pro Ser Asn Met Glu Gly Tyr Ser Lys Thr Gln Tyr Asn Gln | | | |
| 305 | 310 | 315 | 320 |
| gta cca agc gaa gac ttt gaa cgc gct cct cag agt cca act ctc ccg | | | 1008 |
| Val Pro Ser Glu Asp Phe Glu Arg Ala Pro Gln Ser Pro Thr Leu Pro | | | |
| 325 | 330 | 335 | |
| ctc gct aag gta gct gcc cct aat ctc agc cgg atg gga gcg gtg cct | | | 1056 |
| Leu Ala Lys Val Ala Ala Pro Asn Leu Ser Arg Met Gly Ala Val Pro | | | |
| 340 | 345 | 350 | |
| gtg atg att cca gcc cag agc aag gac ggg tcc ata gta taa | | | 1098 |
| Val Met Ile Pro Ala Gln Ser Lys Asp Gly Ser Ile Val | | | |
| 355 | 360 | 365 | |
| <210> 4 | | | |
| <211> 365 | | | |
| <212> PRT | | | |
| <213> Artificial/Unknown | | | |
| <400> 4 | | | |
| Met Ala Leu Leu Leu Cys Phe Val Leu Leu Cys Gly Val Ala Asp Leu | | | |
| 1 | 5 | 10 | 15 |
| Thr Arg Ser Leu Ser Ile Thr Thr Pro Glu Gln Met Ile Glu Lys Ala | | | |
| 20 | 25 | 30 | |
| Lys Gly Glu Thr Ala Tyr Leu Pro Cys Arg Phe Thr Leu Gly Pro Glu | | | |
| 35 | 40 | 45 | |
| Asp Gln Gly Pro Leu Asp Ile Glu Trp Leu Leu Ser Pro Ala Asp Asn | | | |
| 50 | 55 | 60 | |
| Gln Lys Val Asp Gln Val Ile Ile Leu Tyr Ser Gly Asp Lys Ile Tyr | | | |
| 65 | 70 | 75 | 80 |
| Asp Asp Tyr Tyr Gln Asp Leu Lys Gly Arg Val His Phe Thr Ser Asn | | | |
| 85 | 90 | 95 | |
| Asp Leu Lys Ser Gly Asp Ala Ser Ile Asn Val Thr Asn Leu Gln Leu | | | |
| 100 | 105 | 110 | |
| Ser Asp Ile Gly Thr Tyr Gln Cys Lys Val Lys Lys Ala Pro Gly Val | | | |
| 115 | 120 | 125 | |

Gly Asn Lys Lys Ile Gln Leu Thr Val Leu Leu Lys Pro Ser Gly Thr
130 135 140

Arg Cys Tyr Val Asp Gly Ser Glu Glu Ile Gly Asn Asp Phe Lys Leu
145 150 155 160

Lys Cys Glu Pro Lys Glu Gly Ser Leu Pro Leu Leu Tyr Glu Trp Gln
165 170 175

Lys Leu Ser Asn Ser Gln Lys Leu Pro Thr Leu Trp Leu Ala Glu Met
180 185 190

Thr Ser Pro Val Ile Ser Val Lys Asn Ala Ser Thr Glu Tyr Ser Gly
195 200 205

Thr Tyr Ser Cys Thr Val Lys Asn Arg Val Gly Ser Asp Gln Cys Leu
210 215 220

Leu Arg Leu Asp Val Val Pro Pro Ser Asn Arg Ala Gly Thr Ile Ala
225 230 235 240

Gly Ala Val Ile Gly Val Leu Leu Ala Leu Val Leu Ile Gly Leu Ile
245 250 255

Val Phe Cys Cys His Lys Lys Arg Arg Glu Glu Lys Tyr Glu Lys Glu
260 265 270

Val His His Asp Ile Arg Glu Asp Val Pro Pro Pro Lys Ser Arg Thr
275 280 285

Ser Thr Ala Arg Ser Tyr Leu Gly Ser Asn His Ser Ser Leu Gly Ser
290 295 300

Met Ser Pro Ser Asn Met Glu Gly Tyr Ser Lys Thr Gln Tyr Asn Gln
305 310 315 320

Val Pro Ser Glu Asp Phe Glu Arg Ala Pro Gln Ser Pro Thr Leu Pro
325 330 335

Leu Ala Lys Val Ala Ala Pro Asn Leu Ser Arg Met Gly Ala Val Pro
340 345 350

Val Met Ile Pro Ala Gln Ser Lys Asp Gly Ser Ile Val
355 360 365